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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/664,697

09/16/2003

Cheng Li

5503

7590

04/19/2007

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EXAMINER

GUPTA, ANISH

ART UNIT

PAPER NUMBER

1654

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
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3 MONTHS

04/19/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

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<b>Office Action Summary</b>	<b>Application No.</b> 10/664,697	<b>Applicant(s)</b> LI ET AL.	
	<b>Examiner</b> Anish Gupta	<b>Art Unit</b> 1654	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 27 December 2006.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 3-29 is/are pending in the application.
- 4a) Of the above claim(s) 14-19 and 25-29 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 3-13 and 20-24 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Election/Restrictions*

1. Applicants argue that the statements made in the response, 5-15-06, do not constitute an admission that the species “do not define independent invention.” Applicants assert that “statements alone don on establish that the inventions are not patentably distinct. Arguments of counsel alone cannot take place of evidence in the record in response the an examiners’s rejection.”

Applicants arguments have been fully considered and have been found persuasive.

The MPEP states “[s]hould applicant traverse on the ground that the inventions or species are not patentably distinct, applicant should submit evidence or identify such evidence now of record showing the inventions or species to be obvious variants or clearly admit on the record that this is the case. In either instance, if the examiner finds one of the inventions unpatentable over the prior art, the evidence or admission may be used in a rejection under 35 U.S.C.103(a) of the other invention.” Thus, the MPEP requires that Applicant furnish “evidence or identify such evidence now of record showing the inventions or species to be obvious variants or clearly admit on the record that this is the case.” Since Applicants did not submit such evidence and since Applicant only submitted arguments, the response dated, 5-16-06, was not a traversal on the grounds “that the inventions or species are not patentably distinct.” Thus, the statements made in response to the restriction have not been considered as an admission.

The election of species, however, has been reinstated. Since Applicant did not submit evidence of record submit evidence or identify such evidence now of record showing the inventions or species to be obvious variants or clearly admit on the record that this is the case, the species are patentably distinct from one another. For example, a search for a MAP structure where the sequence is GTPGPQGIAGQRGVV does not lead to a peptide of KNEED. Both are structurally distinct

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form one another. Thus, each species, corresponding to SEQ ID1-12 and anti-inflammatory agents, antithrombogenic agents, growth factor agents, and adhesion barrier agents, are patentably distinct from one another and have independent searches.

The requirement is deemed proper and is therefore made FINAL.

This application contains claims 14-19, 25-29 drawn to an invention nonelected species.

Note that claim 14-21 and 25-29 do not correspond to an elected species since these claims differ from the elected species in either the substrate, the MAP structure, i.e. MAP 4 or MAP8 (the species found in the prior art is a MAP 16), or the sequence. The species NH<sub>2</sub>-GLY-THR-PRO-GLN-ILE-ALA-GLY-ARG-GLY-VAL-VAL)<sub>4</sub>-(Lys)<sub>2</sub>-Lys-β-Ala-COOH if found free of the prior art.

The search has been extended to peptide of SEQ ID NO. 2.

A complete reply to the final rejection must include cancellation of nonelected claims or other appropriate action (37 CFR 1.144) See MPEP § 821.01.

### **Withdrawn Rejections**

The rejection under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention is hereby withdrawn.

### **Maintained Rejections**

#### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

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2. Claims 5-13, 20-24 remain rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Applicants argue that the specification provides support for the variable R which contains any type and number of cell binding ligands, anti-inflammatory agents, anti-thrombogenic agents, growth factor structures, adhesive or adhesion barriers structures, and combination thereof up to 200 amino acids. Applicants make reference to the polypeptide VEGF on page 75 and page 76. Applicants also make reference to page 23-27 of the specification to provide support for written description. For variable Z, Applicant argue that a poly-lysine is a polypeptide up to a length of 500 amino acids and can have a molecular weight of between 70,000-150,000 daltons. Thus, Z comprising amino acids totaling 500 is described.

Applicants arguments have been fully considered but have not been found persuasive.

The specific portion of the specification regarding VEGF, recites growth factor-VEGF. Thus, the specification discloses on specific growth factor VEGF from a myriad of know growth factors. This single example does not provide ample written description. As state in the previous office action, As stated earlier, the MPEP states that written description for a genus can be achieved by a representative number of species within a broad generic. A single example does not constitute a representative number of examples. Furthermore, it is unclear how this growth factor, VEGF, provides written description for anti-inflammatory agents, anti-thrombogenic agents, growth factor structures, adhesive or adhesion barriers structures, and combination thereof up to 200 amino acids.

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Applicants arguments did not address this issue. Applicants state that page 23-26 and page 27-45 recite numerous peptides. However, all of these pages are confined to different MAP structures containing specific sequence ID 1-12 as claimed in claim 5. When discussing the agents recited above, the specification is confined to broad recitation without specific examples. For example, Example 9C recites "adhesion barrier-oligomer." However, the example never defines the sequence to this adhesion barrier oligomer. The specification is void of any peptides that have a length of greater than 20-25 amino acids in length. There is no disclosure any peptides of sequences containing 100 or thousands of amino acids as the claims recite.

With respect to the Z variable, Applicants make reference to polylysine. While polylysine may be recited in the specification, the specification is void of any specific guidance that the polylysine is indeed 500 amino acids in length. Applicants make reference to the web-site MP Biomedicals to illustrate that a polylysine homopolymer of 500 amino acids. However, the specification, as originally filed, does not make reference to this web-site and secondly the originally filed specification does not imply the use of polylysine homopolymers. In fact, when discussing polylysines, the specification does not make reference to any homopolymers. Further, the specification does not provide a single working example where a polylysine homopolymer is used as the Z variable. Assuming arguendo that the specification does provide support for polylysine homopolymer, it is unclear how this provides written description for any peptide of up to 500 amino acids containing lysine, polylysine or ornithine. The claim state that Z contains lysine, polylysine, and ornithine, and is up to 500 amino acids. A reasonable interpretation of this definition includes sequences up to 500 amino acids that contain one or few lysine residues, along with other amino acids residues. The specification does not provide a single example of a Z variable with greater than a single lysine residue (see page 30-45). The description requirement of the patent

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statute requires a description of an invention, not an indication of a result that one might achieve if one made that invention. See In re Wilder, 736 F.2d 1516, 1521, 222 USPQ 369, 372-73 (Fed. Cir. 1984) (affirming rejection because the specification does "little more than outlin[e] goals appellants hope the claimed invention achieves and the problems the invention will hopefully ameliorate."). Accordingly, it is deemed that the specification fails to provide adequate written description for the genus of the claims and does not reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the entire scope of the claimed invention.

Rejection is maintained.

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

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3. Claims 5-13, 22-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nomizu et al. in view of Tam.

The claims are drawn to multimeric peptide structure bound to a substrate.

The reference of Nomizu et al. teach multimeric peptide where the peptide is GRGD<sub>2</sub>SG (see page 250). The reference specifically teaches peptides having the sequence: (Ac-Gly-Arg-Gly-Asp-Ser-Gly)<sub>16</sub>-Lys<sub>8</sub>-Lys<sub>4</sub>-Lys<sub>2</sub>-Lys-Gly-OH (see page 250). The multimeric structure of the peptides meets the limitation of claim 2 of the instant application, where the R's correspond to the sequence comprising RGD, The Z's correspond to the lysines, and X corresponds to the Glycine residue. The difference between the prior art and the instant application is that the reference does not specifically disclose the conjugation of the multimeric structure to a substrate (S).

However, Nomizu et al. states Tam and his coworkers established the multimeric antigenic peptide (MAP) system in which the antigen peptide is assembled on a lysine tree (see page 249). Reference of Ruben et al. that multiple antigen peptides (MAPs) were first described by J. P. Tam. MAPs consist of multiple copies of a specific peptide attached to a non-immunogenic lysine core. MAP peptides usually contain four or eight copies of the peptide often referred to as MAP-4 or MAP-8 peptides. By way of non-limiting example, MAPs may be synthesized onto a lysine core matrix attached to a polyethylene glycol-polystyrene (PEG-PS) support (see page 66, paragraph 138). Note that polystyrene is one of the substrates claimed in claims 4, 6, 9 and 26. Therefore it would have been obvious to one of ordinary skill in the art to synthesize the multimeric structure of Nomizu et al. and attain a product where the branched polypeptide is bound to the polystyrene. This (Ac-Tyr-Ile-Gly-Ser-Arg-Gly)<sub>x</sub>-Lys<sub>n</sub>-Lys<sub>n</sub>-Lys-Gly polystyrene peptide meets the limitation of the claimed invention.

#### Response to Arguments

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Applicants argue that the references do not teach nor suggest the claimed invention.

Applicants state that the secondary reference does not cure the deficiencies of the primary of the attachment to the substrate.

Applicants arguments have been fully considered but have not been found persuasive.

The reason or motivation to modify the reference may often suggest what the inventor has done, but for a different purpose or to solve a different problem. It is not necessary that the prior art suggest the combination to achieve the same advantage or result discovered by applicant. See MPEP 2144. Here, the secondary reference provides motivation as to the use of a polyethylene glycol-polystyrene (PEG-PS) support in the synthesis of the MAP structure. In making the reference structure, the reference discloses a MAP structure conjugated to polyethylene glycol-polystyrene (PEG-PS). Note that polystyrene is one of the substrates recited in, for example, claim 6. Thus, the reference meets the limitations of the structure since the primary discloses the MAP, with the claimed sequence, and the secondary disclose the substrate. Further, this meets the limitation of the implants since the claims only require the MAP conjugated to the substrate. Since all of the structural limitations are rendered obvious, the claims are also rendered obvious.

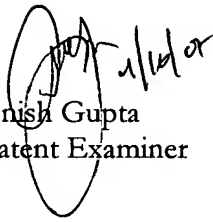
4. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be

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calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anish Gupta whose telephone number is (571)272-0965. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cecilia Tsang, can normally be reached on (571) 272-0562. The fax phone number of this group is (571)-273-8300.

  
Anish Gupta  
Patent Examiner